We claim:

1. A semiconductor apparatus, comprising:

a dielectric layer comprising a surface, a portion of said surface having exposed aromatic groups; and

a polycrystalline semiconductor layer comprising an organic semiconductor composition overlying and in contact with said portion of said surface, said organic semiconductor composition comprising a compound comprising a chain-like moiety, the chain-like moiety comprising a conjugated thiophene or phenyl group and comprising alkyl chains at ends of the chain-like moiety.

2. The semiconductor apparatus of claim 1, in which each of said moieties comprises on average at least about three conjugated aromatic rings.

3. The semiconductor apparatus of claim 1, in which the alkyl chains comprise on average between about 3 and about 12 carbon atoms.

4. The semiconductor apparatus of claim 1, in which said dielectric layer is formed from a precursor composition, said precursor composition having a refractive index of at least about 1.52.

5. The semiconductor apparatus of claim 1, in which said polycrystalline semiconductor layer has a mobility of at least about 0.1 centimeters squared per volt-second.

6. The semiconductor apparatus of claim 1, in which said polycrystalline semiconductor layer has an average semiconductor crystal size of at least about 0.1 micrometer.

7. The semiconductor apparatus of claim 1, further comprising:

a gate electrode;

a source electrode; and

a drain electrode;

said source and drain electrodes being in spaced apart conductive contact with a channel portion of said semiconductor layer, said gate electrode being positioned to control a conductivity of said channel portion.

8. The semiconductor apparatus of claim 2, in which each of said moieties comprises on average between about three and about six conjugated aromatic rings.

9. The semiconductor apparatus of claim 4, in which said precursor composition comprises a member selected from the group consisting of: naphthalenes, styrenes, phenols, and cresols.

10. The semiconductor apparatus of claim 7, in which the channel portion has an on/off ratio of at least about 100.

11. The semiconductor apparatus of claim 8, in which the semiconductor composition comprises a member selected from the group consisting of: 5,5′-Bis(4-*n*-hexylphenyl)-2,2′-bithiophene; 5,5″-Bis(4-*n*-hexylphenyl)-2,2′:5′,2″-terthiophene; 5,5‴-Bis(4-*n*-hexylphenyl)-2,2′:5′,2″:5″,2‴-quaterthiophene; 1,4-Bis[5-(4-*n*-hexylphenyl)-2-thienyl]benzene; 2,5-Bis[4(4′-*n*-hexylphenyl)phenyl]thiophene; 5,5‴-Bis(4-*n*-hexyl)-2,2′:5′,2″:5″,2‴-quaterthiophene; 5,5‴-

Bis(4-*n*-hexyl)-2,2′:5′,2″:5″,2‴:5‴,2⁗-pentathiophene; 1,4-Bis[(5-n-hexyl)-2,2′-bithienyl]benzene; 2,6-bis(5-hexylthien-2-yl)naphthalene; and mixtures.

12. The semiconductor apparatus of claim 9, in which said dielectric layer comprises poly(4-vinylphenol-co-2-hydroxyethyl methacrylate).

13. The semiconductor apparatus of claim 11, in which the semiconductor composition comprises 5,5′-Bis(4-*n*-hexylphenyl)-2,2′-bithiophene.

14. A method of making a semiconductor apparatus, comprising the steps of:

providing a dielectric layer comprising a surface, a portion of said surface having exposed aromatic groups; and

providing a polycrystalline semiconductor layer comprising an organic semiconductor composition overlying and in contact with said portion of said surface, said organic semiconductor composition comprising a compound comprising a chain-like moiety, the chain-like moiety comprising a conjugated thiophene or phenyl group and comprising alkyl chains at ends of the chain-like moiety.

15. The method of claim 14, in which said step of providing the polycrystalline semiconductor layer comprises the steps of:

providing a solution of said organic semiconductor composition in a solvent;

providing an atmosphere comprising vapor of a solvent for said organic semiconductor composition;

applying said solution to said portion of said dielectric layer in the presence of said atmosphere; and

evaporating said solvent from said applied solution.

16. The method of claim 14, in which each molecule of said compound comprises on average at least about three conjugated aromatic rings.

17. The method of claim 14, in which said dielectric layer is formed from a precursor composition, said precursor composition having a refractive index of at least about 1.52.

18. The method of claim 16, in which the semiconductor composition comprises a member selected from the group consisting of: 5,5′-Bis(4-*n*-hexylphenyl)-2,2′-bithiophene; 5,5″-Bis(4-*n*-hexylphenyl)-2,2′:5′,2″-terthiophene; 5,5‴-Bis(4-*n*-hexylphenyl)-2,2′:5′,2″:5″,2‴-quaterthiophene; 1,4-Bis[5-(4-*n*-hexylphenyl)-2-thienyl]benzene; 2,5-Bis[4(4′-*n*-hexylphenyl)phenyl]thiophene; 5,5‴-Bis(4-*n*-hexyl)-2,2′:5′,2″:5″,2‴-quaterthiophene; 5,5⁗-Bis(4-*n*-hexyl)-2,2′:5′,2″:5″,2‴:5‴,2⁗-pentathiophene; 1,4-Bis[(5-n-hexyl)-2,2′-bithienyl]benzene; 2,6-bis(5-hexylthien-2-yl)naphthalene; and mixtures.

19. An integrated circuit, comprising:

a dielectric layer comprising a surface, a portion of said surface having exposed aromatic groups;

a polycrystalline semiconductor layer comprising an organic semiconductor composition overlying and in contact with said portion of said surface, said organic semiconductor composition comprising a compound comprising a chain-like moiety, the chain-like moiety comprising a conjugated thiophene or phenyl group and comprising alkyl chains at ends of the chain-like moiety;

a gate electrode;

a source electrode; and

a drain electrode;

said source and drain electrodes being in spaced apart conductive contact with a channel portion of said semiconductor layer, said gate electrode being positioned to control a conductivity of said channel portion.

20. A method of making an integrated circuit, comprising the steps of:

providing a dielectric layer comprising a surface, a portion of said surface having exposed aromatic groups;

providing a polycrystalline semiconductor layer comprising an organic semiconductor composition overlying and in contact with said portion of said surface, said organic semiconductor composition comprising a compound comprising a chain-like moiety, the chain-like moiety comprising a conjugated thiophene or phenyl group and comprising alkyl chains at ends of the chain-like moiety;

providing a gate electrode;

providing a source electrode;

providing a drain electrode;

arranging said source and drain electrodes in spaced apart conductive contact with a channel portion of said semiconductor layer, and

arranging said gate electrode to control a conductivity of said channel portion.